

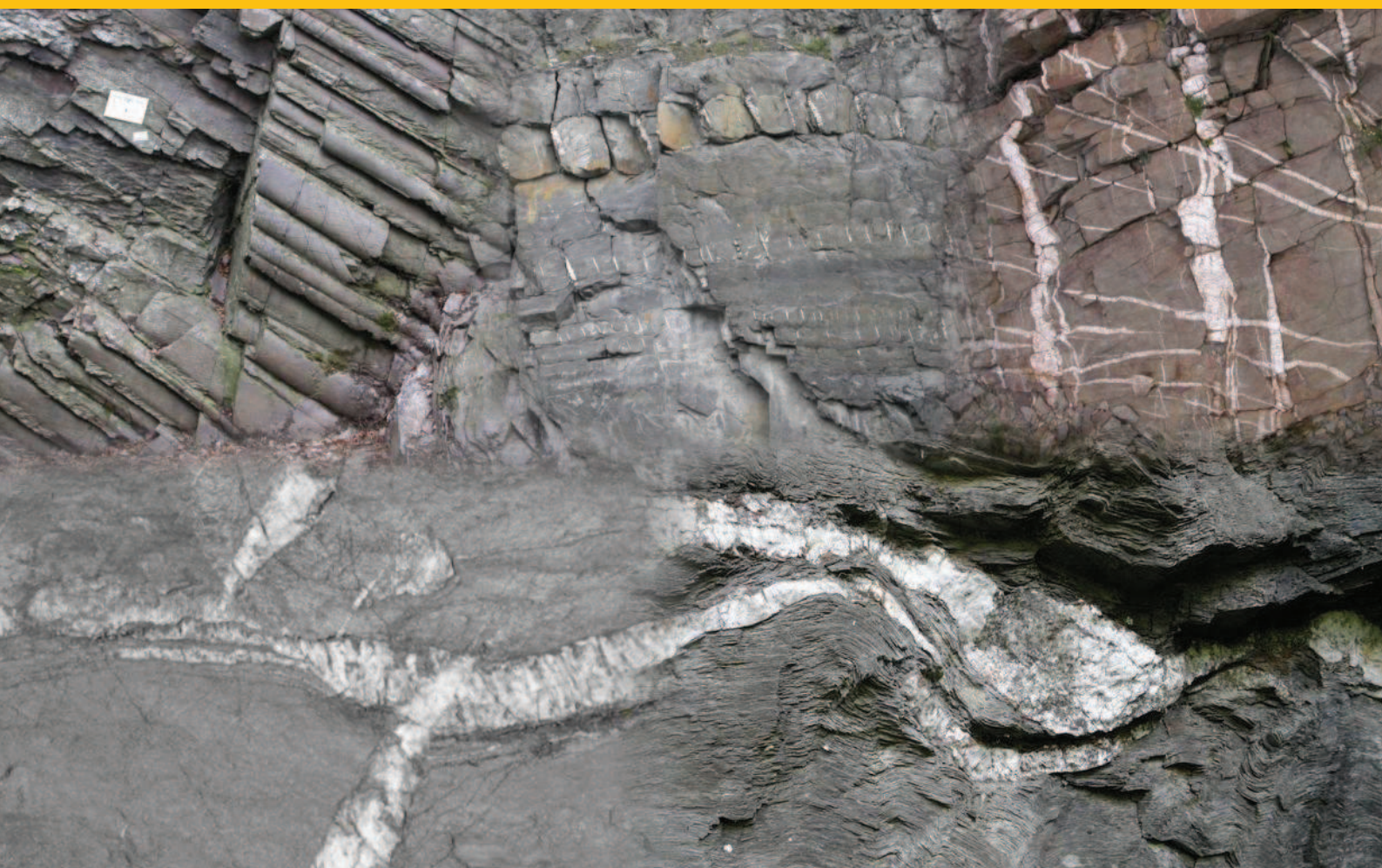
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AMS analysis of the Crozon fold-and-thrust belt of Central Armorica (Brittany, France)

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The extremely well-preserved coastal sections of the Crozon peninsula, located in the westernmost part of the Armorican Massif of Brittany (France), exposes Palaeozoic sediments resting unconformably on a Late Proterozoic (Brioverian) sequence. These sediments were deformed during the Variscan Orogeny, resulting in the Crozon fold-and-thrust belt (CFTB). We present new results of a structural and magnetic fabric analysis of the 1800 m long Kerguillé – Lostmarc'h cross-section in the southern part of the Crozon peninsula, which is predominantly composed of the very low-grade metasedimentary Plougastel Formation (quartzitic sandstones and phyllites) of Pridolian-Lochkovian age.

The studied section has a predominantly steep architecture and comprises large-scale, open folds with an upright attitude and centimeter to meter-scale, asymmetric, disharmonic folds with an associated axial planar cleavage. Folds occur in three distinct zones. The structural analysis reveals evidence for layer-parallel slip (quartz-chlorite layer-parallel veins with slickenfibres), reverse faulting at different scales and two major transverse or oblique faults accompanied by a fault gouge. The structures are typical for the interior parts of a thin-skinned fold-and-thrust belt with décollement levels along rheologically weaker metasedimentary layers. The deformation took place under anchizonal (sub-greenschist) metamorphic conditions as evidenced by the typical prograde metamorphic mineral assemblage comprising pyrophyllite, chlorite, illite, muscovite and paragonite. The transverse or oblique faults developed at a higher structural level and we believe that they postdate the Variscan Orogeny.

An anisotropy of magnetic susceptibility (AMS) analysis is performed on 63 samples collected from a specific marker horizon, i.e. homogeneous siltstone beds (HSB), present throughout the section. The magnetic susceptibility is controlled by paramagnetic white mica (muscovite, illite and paragonite) and chlorite minerals. The bulk susceptibility values range from 150 to 700 $\times 10^{-6}$ [SI]. The AMS of all investigated samples reflects a composite magnetic fabric with the maximum magnetic susceptibility axis (K_1) parallel to the bedding-cleavage intersection lineation. However, we can discriminate between (1) samples that have a triaxial to oblate susceptibility ellipsoid oriented more or less parallel to the cleavage plane and (2) samples that have a (moderately) prolate magnetic susceptibility ellipsoid with a variable orientation for the minimum susceptibility axis (K_3) between the poles to bedding and cleavage. The former samples are the most numerous and occur throughout the section, whereas the latter only occur in the southernmost part of the section, in the footwall of an important south-vergent reverse fault, i.e. the Lostmarc'h fault.

The discrepancy in magnetic anisotropy cannot be explained by a difference in the angle between bedding and cleavage as this behaves similar throughout the section. Therefore, our observations suggest a structural control on the magnetic fabric development in the studied cross-section. In the proximity of the Lostmarc'h fault, a large part of the shortening is localised in the Lostmarc'h fault zone and in the ductile Kerguillé slates of the hanging wall. This leaves a relatively smaller amount of the shortening that is accommodated by fabric development in the homogeneous siltstones of the Plougastel Formation in the footwall of the fault, resulting in a less pronounced magnetic anisotropy.